



Small Grains XII

Fusarium head scab (Scab of wheat and barley)

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Cause: *Fusarium graminearum*, *Fusarium pseudograminearum*, *Fusarium culmorum*

Symptoms: Tan to brown discoloration at the base of the head

Diseased spikelets (partial bleaching of the head) or entire head turns white

Under moist conditions, pink/orange color is seen (produced by fungal spores and hyphae) on the surface of the glumes

Infected kernels are shriveled, white, and chalky in appearance (tombstones)

Outcomes of disease: Low yields, low test weights and low seed germination; Toxin contained in kernels called deoxynivalenol (DON), also called vomitoxin. The threshold level for human food is 1 ppm and feed is 2 ppm. There is a zero tolerance for DON in malt barley.

Often confused with: Take-all disease

Take-all is caused by *Gaeumannomyces graminis* var. *tritici*. It also causes bleached heads. Take-all does not cause partial bleaching of the heads. The characteristic take-all symptom is a shiny black discoloration of the base of the plant and stem. The plants pull out of the ground easily.

Life cycle of the pathogen:

Scab is initially introduced into a field through infected seed or wind-borne inoculum. Scab overwinters on crop stubble such as wheat, barley, and corn, and spreads rapidly by rain splash and wind. The head and in particular the open female flower during anthesis is most susceptible to infection by *Fusarium* spores. Some infection can occur during kernel development. Moist environmental conditions favor infection, including rain, irrigation, fog, and higher evening dew periods.

Management Approaches

Cultural Management Practices

- Plant healthy, high germ seed
- Use a seed treatment fungicide when planting seed with low levels of *Fusarium*
- Use scab-tolerant varieties (see the most recent variety trial data for scab tolerant varieties adapted to your area)

- Crop rotation to a broadleaf crop
- Withhold irrigation during flowering, which can extend up to 7-10 days
- Incorporate straw residue for degradation and inoculum destruction.

Fungicide Program

Apply a fungicide if:

- If planting into fields with:
 - A history of scab
 - A high crop residue of wheat, barley, or corn that resides on the soil surface
 - Weather or irrigation schedule is predicted to be wet during flowering
 - Foliar spray must be applied at the first sign of anthers extruding from the head to protect the flowers for 7-10 days

Product list for Fusarium Head Scab:

Product	Product rate/acre	Application timing
Tebuconazole -Folicure -Orius -TebuStar	4 fl oz	Up to Feekes 10.5 (late heading emergence) plant stage One application per season, MT Sec. 18 Be aware of the pre-harvest interval (see label)
Propiconazole - Tilt - PropiMax	2-4 fl oz	Feekes 8 (emerging flag leaf); 24(c) label allows application to flowering, Feekes 10.5 Do not apply more than 4 oz/season

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